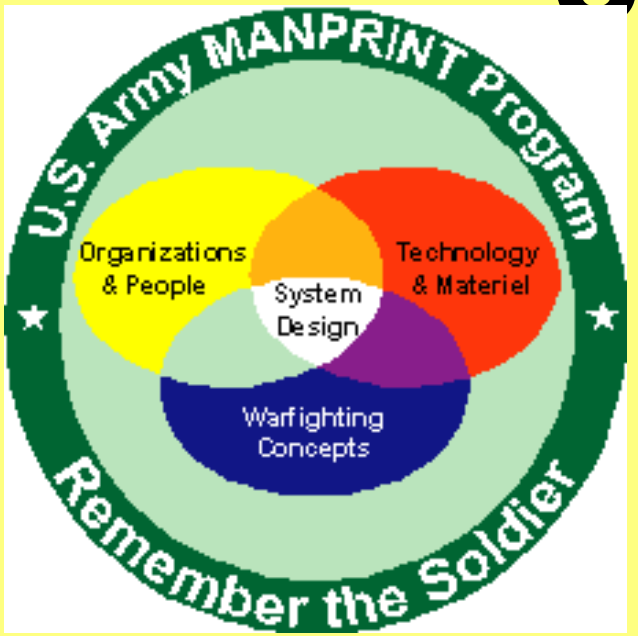
MANPRINT UPDATE



MANPOWER AND PERSONNEL INTEGRATION

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Director for MANPRINT, Army G-1

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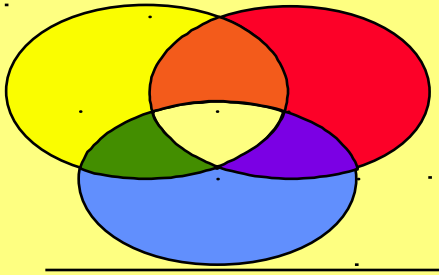
HSI: DEFINITIONS

- "**Human**" in H-S-I Includes:
  - Users: Operators, Maintainers, Supporters, and Trainers – military, civilian, and contractors
- "**Systems**" in H-S-I Includes:
  - Hardware, Equipment, Software, and Doctrine That Function Together to Fulfill a Mission Need
- "**Integration**" in H-S-I Includes:
  - Integration Among the HSI Elements and With the Design

MANPRINT OVERVIEW

Objectives of the MANPRINT Program

- **Enhance the operational effectiveness of the total system by optimizing the soldier-materiel interface.**
- **Ensure that system design conforms to the capabilities and limitations of the soldier.**
- **Ensure systems are suitable, survivable, and safe for their intended use.**
- **Reduce total life-cycle costs of soldier-materiel systems.**



MANPRINT OVERVIEW

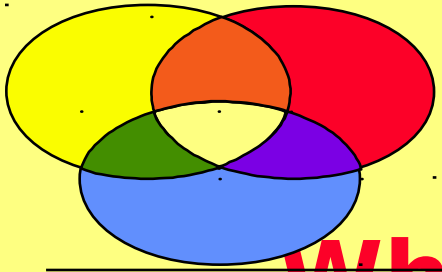
AR 602-2
MANPOWER AND PERSONNEL INTEGRATION

(MANPRINT) in the System Acquisition Process

1. **Establishes policy, responsibilities and documentation requirements for implementing and supporting MANPRINT.**

2. **Emphasizes front-end planning of soldier-system design for optimum total system**

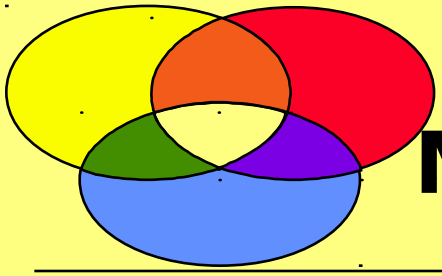
- **Regulation is being modified to be more consistent with new DoD 5000 series**
- **Cooperation with Navy**



MANPRINT OVERVIEW

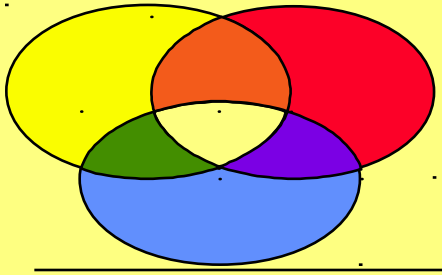
Why is MANPRINT in the G-1?

- **MANPRINT is the G-1's only influence over the Army's manpower needs and expenditures for future systems.**
- **Equipment problems impact directly on soldier issues.**
- **Manpower and personnel costs are key drivers of life-cycle costs.**
- **MANPRINT must be independent of the acquisition community.**



MANPRINT Management

- **HQDA/G-1(Personnel)**
  - MANPRINT Directorate
    - Proponency and Policy
    - Staff of 4, Small support contract
    - Signs MANPRINT Assessment that goes to Acquisition Executive
    - Attends most high-level meetings (SAGs, ASARCs, AROCs, IPRs, IIPTs)
    - Is the customer for Soldier-Oriented R&D
- **In the field**
  - 5+ organizations that do the key day-to-day work
    - WIPTs, draft MANPRINT Assessments
- **Coordination**
  - Army Test & Evaluation Command
  - DUSA(OR)

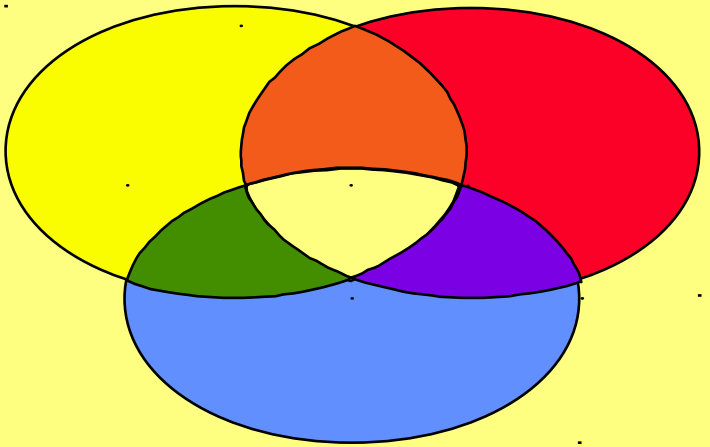


What's New?

- New Deputy Director
  - Dr. Beverly Knapp
- New office at Redstone
  - Taylor Jones has relocated
- New Reservist
  - LTC Tom Marino
- New G-1
  - LTG Hagenbeck
- New AG-1
  - Mark Lewis
- MANPRINT Handbook
  - almost

What have we done lately?

- LOSAT
- Stryker
- FCS



Stryker MGS
HFE Effort Background

In March ’03 PM MGS formed a Red Team consisting of User representatives, PM and contractor personnel to determine solutions for the Mobile Gun System’s human factor issues. The team met bi-weekly at the GDLS tech center in Muskegon, MI to determine solutions from a “hands on” basis. The final meeting was held at the end of June just prior to the vehicle shipment to APG for testing.

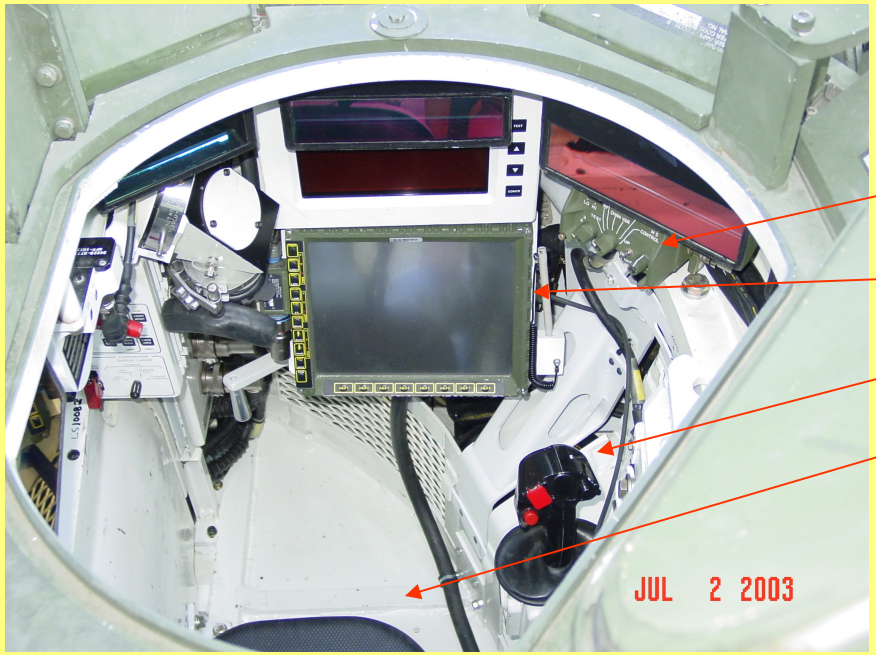
- Pre-HFE effort, the MGS could facilitate approximately a 50th percentile male.
- Now the MGS could facilitate approximately a 95th percentile male.

Turret Basket

GDLS increased turret basket volume from 72.5 cubic ft. to 80 cubic ft.

Commander's Station

New Station



Radio Remote Box

FBCB2 Screen

Joystick Controller

Reduced Structure Beam

Old Station

"Cadillac" Controller

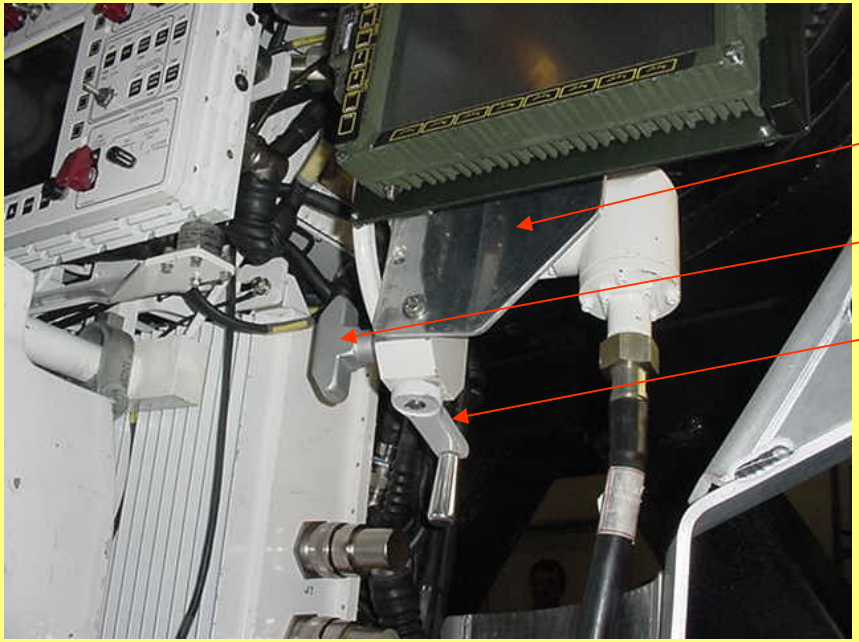
FBCB2 Screen location

Cabling

Commander's Station

Manual Controls

New Station



Handles rotated upward for easier operation

New hand grip

Arm instead of wheel

Old Station

Wheel

Commander’s Station

FBCB2 (Screen / Keyboard)

New Station

Old Station

Note: FBCB2 CPU was removed from under seat and placed in chassis to allow for further seat travel.

Commander’s Station

0 Degree Azimuth Reference

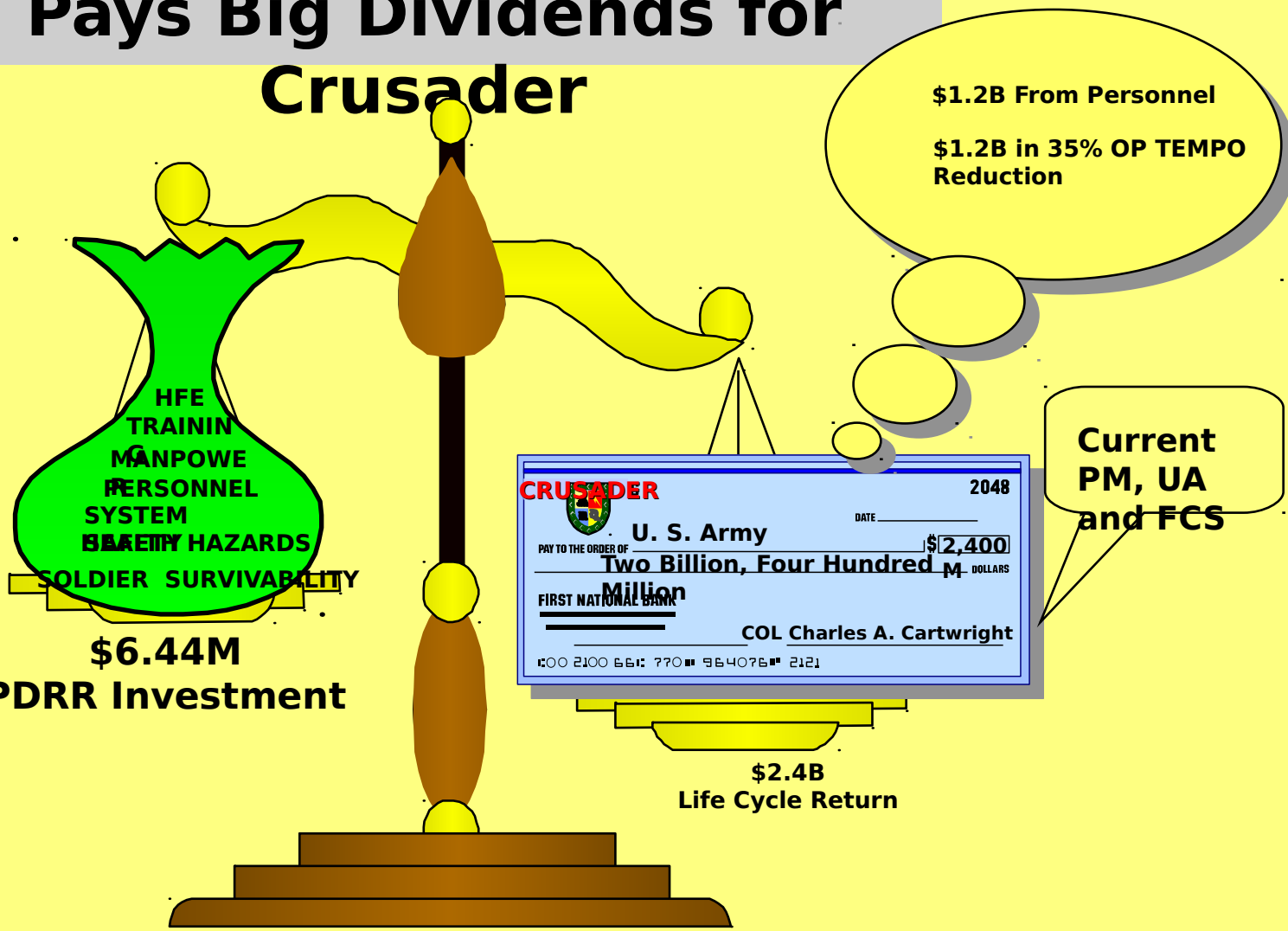
Turret must be at zero degrees in order to transfer ammunition from the replenisher to the carousel. Reference mark was added to ensure turret is at zero when locking the turret.

Turret Common

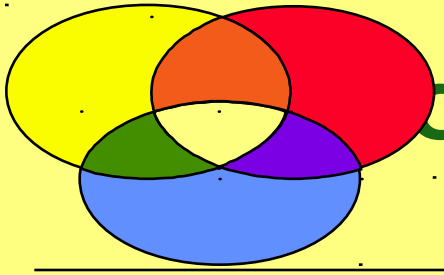
Canister Erect Guards

Guards were added to protect the crewman form the erecting canister during the loading process.

Investment in MANPRINT Pays Big Dividends for Crusader



$2.4 Billion Projected Savings from MANPRINT



FCS Soldier-System of Systems Challenges

Compared to current force, FCS requires:

- Fewer soldiers to operate and maintain a larger number of systems (M)
- Soldiers will manage systems generating far greater volumes of information at an exponentially faster pace (HFE)
- Soldiers will perform more cognitively-intensive functions while vehicles are in motion (HFE, T)
- Soldiers will operate over much greater distances (HFE)
- Soldiers will depend on & use embedded training to acquire new skills (P,T)
- Soldiers will acquire far greater combined arms skills at lower echelons (P)
- Soldiers will place much greater trust in networks to keep them alive (SSv)
- Soldiers will perform all duties without degradation over 3 days of intensive combat after deploying over a 4 day period under a wide range of environmental conditions (HFE, S&H, SSv, T)

SoS and individual platform designs must meet these challenges within the cognitive and physical limits of the future soldier. **The future soldier looks much like today's soldier**.

MANPRINT activities are targeted to address the above issues throughout the FCS program.

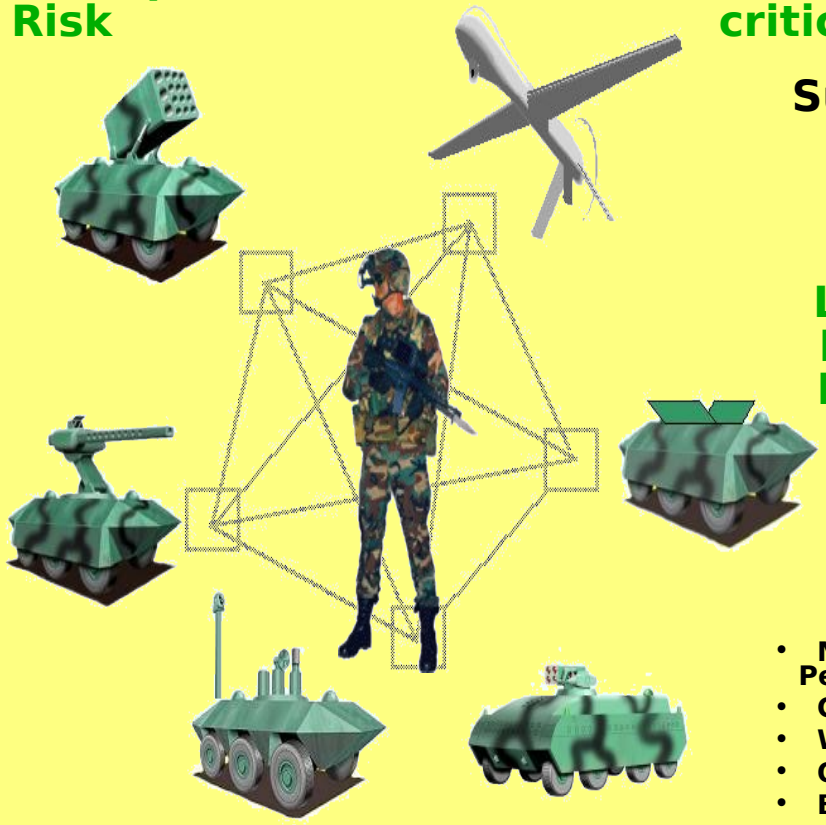
FCS - Human Dimension

"Soldier Performance During Operations on the Move" Accepted as a Risk

Prevents a major issue from the Milestone B HFEA from becoming critical

Milestone B Documentation

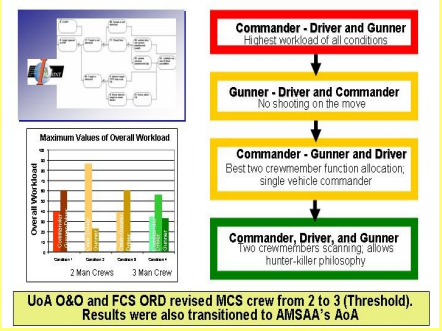
- HFEA 4 Feb 03
- SSvA 7 Feb 03
- MPTA 24 Jan 03
  - TAD (Training Systems IPT – HD IPT)
  - MER (Training Systems IPT – HD IPT)
- ISA 31 Jan 03
- HHA Oct 02
- MA March 02
- PESHE
- SMMP April 03 (first draft)



Supported AoA

Lessons Learned to Provide Insights to Potential Problems in SDD

2 vs. 3 Soldier Trade Study for


Commander - Driver and Gunner
Highest workload of all conditions
Gunner - Driver and Commander
No shooting on the move
Commander - Gunner and Driver
Best two crewmember function allocation; single vehicle commander
Commander, Driver, and Gunner
Two crewmembers scanning, allows hunter-killer philosophy
Maximum Values of Overall Workload
Overall Workload
2 Man Crews
3 Man Crew
UoA O&O and FCS ORD revised MCS crew from 2 to 3 (Threshold). Results were also transitioned to AMSAA's AoA

7 White Papers

- Motion Effects on Cognitive Performance
- Control of Unmanned Systems
- Workload & Workspace Modeling
- OFW Integration
- Battle Command
- Sustained Operations
- Manpower Personnel & Training

FCS LSI using IMPRINT & C3TRACE as the common approach to evaluate soldier-system performance requirements

MANPRINT Process

Assistance

Documents	Actions	Documents	Actions	Documents	Actions	Documents	Actions
ICD SMMP	AOA ICT	CDD SMMP ME	AROC IPTs ASARC OIPT	TEMP STRAP Acq Strat Contract Docs SMMP/ME CPD	AROC ASARC IPTs OIPT	TEMP STRAP SMMP/ME Contract Docs	ASARC IPTs OIPT

→ **Soldier-Oriented Research & Development** → **Soldier-Oriented Studies**

Assessment: **MANPRINT Assessment** | **MANPRINT Assessment** | **MANPRINT Assessment**

Milestones: A | B | C | FRP

Phases:

Concept Refinement → ICD

Technology Development → CDD

System Development & Demonstration → CPD

Production & Deployment → O&S

MANPRINT ASSESSMENT

Manpower, Personnel and Training Assessment
Human Resources Command (HRC)

Human Factors Engineering Assessment
Human Research & Engineering Directorate (HRED/ARL)

Health Hazards Assessment Reports
Center for Health Promotion and Preventive Medicine (CHPPM)

Independent Safety Assessment
U.S. Army Safety Center (USASC)

Soldier Survivability Assessment
Survivability/Lethality Analysis Directorate (SLAD/ARL)

ARL

MANPRINT Directorate

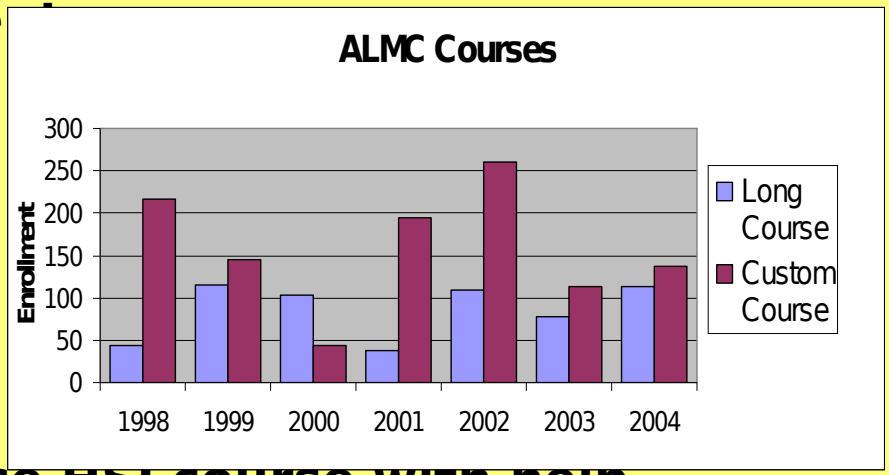
Project Manager (PM)

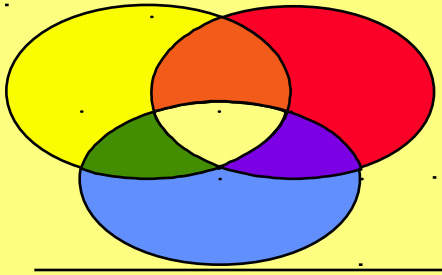
ASARC/MDA

ASA(ALT)

MANPRINT Education

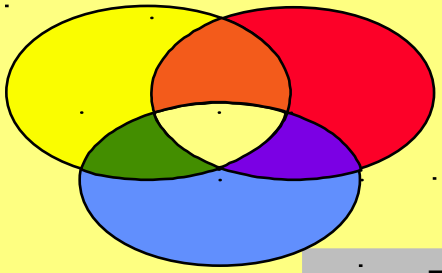
- DAU/DSMC
  - Log 201: HSI chapter added in a distance learning course
  - SE 301: HSI chapter added to a resident course (Navy prepared)
  - TSE 202 (T&E): HSI module added in distance learning course
  - Changes to Force Manageme
- ALMC
  - Two week standard course reworked to 1 week
  - We are now planning development of an industry-oriented course
- Air Force Web Training
  - Developed a new Joint Service HSI course with help of MANPRINT Directorate





Outreach to PMs

- **WIPTs**
- **AUSA Winter Symposium**
- **AUSA Annual Meeting**
- **Materials recently developed—see web site: http://www.manprint.army.mil**
  - **MANPRINT MPT Guide (computer-based, interactive)**
  - **Completely revised MANPRINT Handbook**
- **Forthright communication**



What Remains?

- Policy
  - Possible revision of DoD 5000/CJCSI 3170
  - New Policy: AR 602-2 Revision
- Greater inter-service cooperation
- Additional DAU course instruction
- Develop a course for industry
- More cooperation with ATEC
- Assessing training vs. assessing training process
- Development of an Awareness Plan
  - Video
  - Outreach
- Issue MANPRINT Handbook
- Possible SeaWarrior conversion to Army
- DoD Architecture Framework (DODAF)
- Get more involved with RFI and REF initiatives
- Get MANPRINT into contracts

System/FCS Support

The Bottom Line

- Design efforts must be directed toward battlefield success
- Equipment designed with the soldier in mind is:
  - Easier to use, employ, and operate
  - Easier to maintain and sustain
  - More effective
  - Safer
  - More efficient
  - More cost effective
  - Less likely to require redesign

We must equip the soldier, not man the equipment!

Back-up

MANPRINT Design Influence- Comanche

Easily removable main rotor blades

Split-torque transmission reduces repair/replace times

Dual point folding tail

Tail rotor configuration eliminates personnel hazards

Cockpit configuration

Crew protection

Accessibility to LRUs

Weapons loading/access

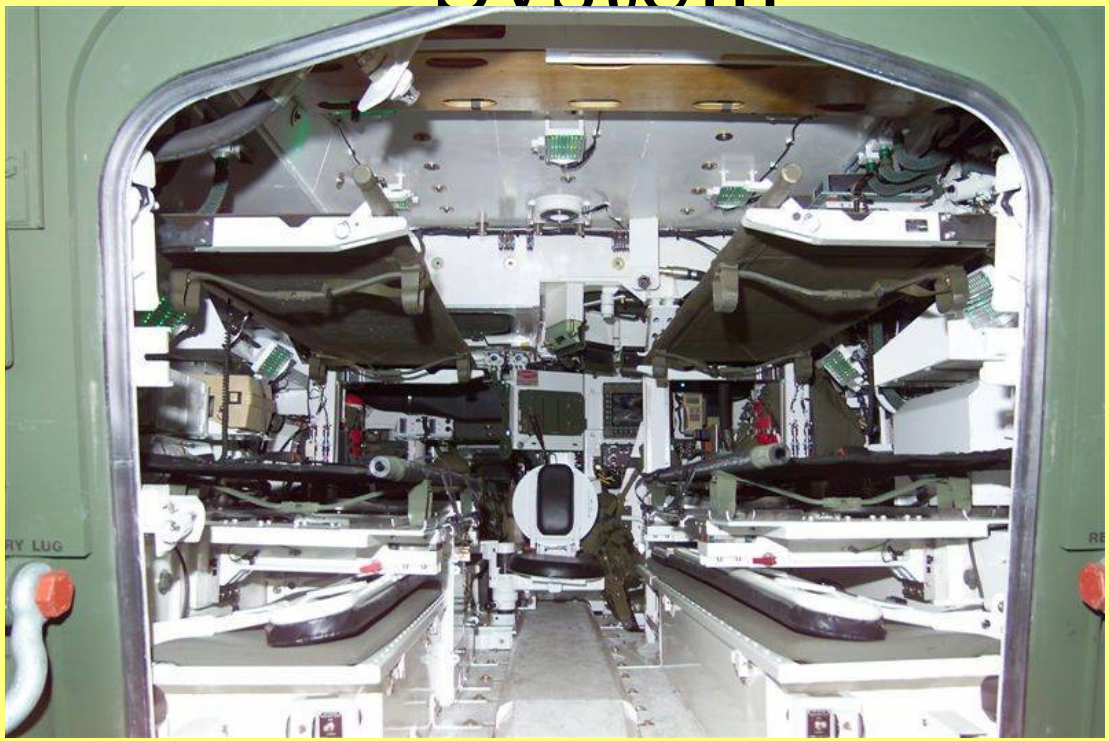
Engine tool set reduced from 134 tools to 6

Mission Equipment Package rack orientation and module location

One piece engine cowl allows greater access to engine and auxiliaries

- ***Initial Required Program Buy - Life Cycle Cost avoidance >***

Mechanical Litter Lift System



The Stryker Medical Evacuation Vehicle contains a mechanical Litter Lift System which makes loading litters easier. Medics carry Litters to the rear of the vehicle, load them onto the rails of the platform, and slide them forward.

Litter lift system will accommodate maximum of four litters. Vehicle can be also configured to carry maximum of six ambulatory patients, or combination of four ambulatory and two litters.

MANPRINT Design Influences--

Crusader

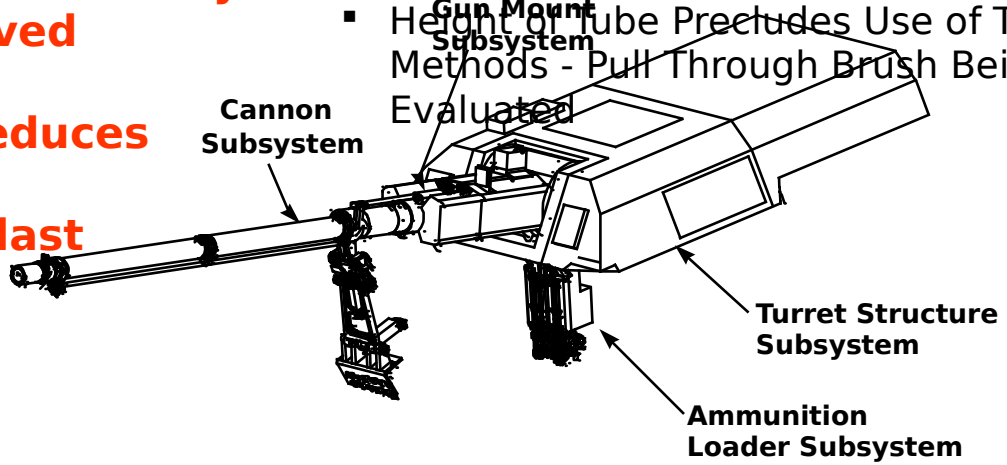
Armament

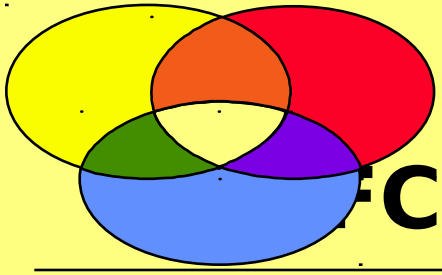
Design Influences

- **Automated Loading & Firing Reduces Crew Size/Eliminates Exposure to Hazards**
- **No Breech Swabbing**
- **Laser Ignition for Improved Reliability & Safety**
- **Modular and Redundant Recoil System Reduces DS Workload**
- **Bore Clear Sensor Enhances Safety**
- **Self Laying/Firing - No Exposed Crew**
- **Velocimeter, Ammo Verification, PTS/GPS combine to improve safety**
- **Enlarged Hatches - Improved Accessibility**
- **Automated Travel-Lock Reduces Crew Exposure**
- **Muzzle Break - Reduces Blast Overpressure**

Watch Items

- **Compact Fighting Compartment Makes Access for Maintenance Difficult**
  - Maximize Reliability of Safety Related and Mission Critical Equipment
  - Maximize Accessibility of Least Reliable Parts
  - Minimize Use of Special Tools
- **Tube Wear Life**
  - Develop Advanced Obturator/Rotating Bands for Existing & Future Projectiles
  - Optimize Rifling Grooves/Twist
  - Optimize Charge Additives
- **Tube Cleaning**
  - Height of Tube Precludes Use of Traditional Methods - Pull Through Brush Being Evaluated





FCS: Key MANPRINT Issues

- Effects of vehicle movement on cognition
- C^2 on the move
- Personnel Capability: potential problems—
  - UGS operator: potential data fusion problems
  - RSV crew: high cognitive and physical demands
  - Vehicle commanders: potential transition and reassignment problems
  - Multiple vehicle types in Army Inventory
- Bandwidth and display size
  - Should be determined by demands, but do not know what they are yet
- Function Decomposition (task analysis) is complicated by the many possible cases to consider.
- Training—must be able to show effectiveness of embedded training compared to other alternatives.
- UGV/UAV: Issue of commonality of controls, displays, and training.

HSI: DEFINITIONS

Human Systems Integration is:

"…..a disciplined, unified and interactive approach to integrate human considerations into system design to improve total system performance and reduce costs of ownership."

- (Cochrane, C.B. and Hagan, G.J. (2001). Glossary of Defense Acquisition Acronyms & Terms. 10th Ed. Ft Belvoir, Virginia: Defense Acquisition University Press)

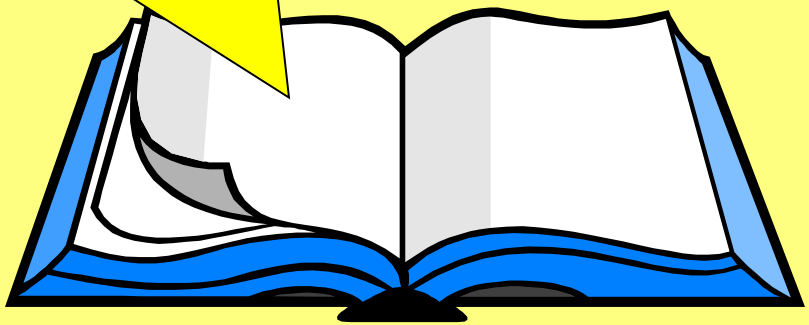
HSI "includes the integrated and comprehensive analysis, design and assessment of requirements, concepts and resources for system manpower, personnel, training, safety and occupational health, habitability, personnel survivability and human factors engineering."

- (*CJCSM 3170.01*, 24 June 2003)

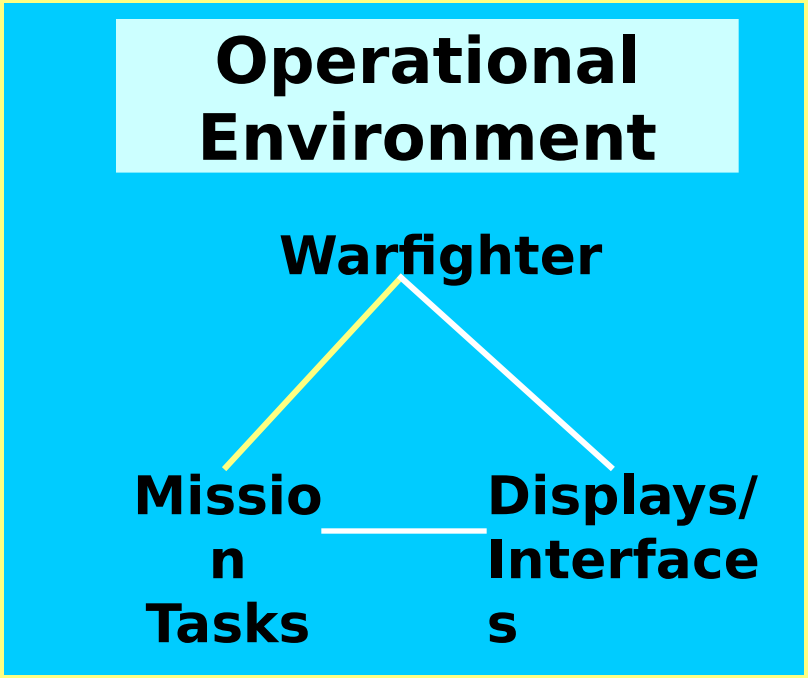
WHY HSI ?

"The Project Manager shall have a comprehensive plan for HSI in place early in the acquisition process to optimize total system performance, minimize total ownership costs, and ensure that the system is built to accommodate the characteristics of the user population that will operate, maintain, and support the system."

DoD Instruction 5000.2, 12 May 2003).



WHY HSI ?



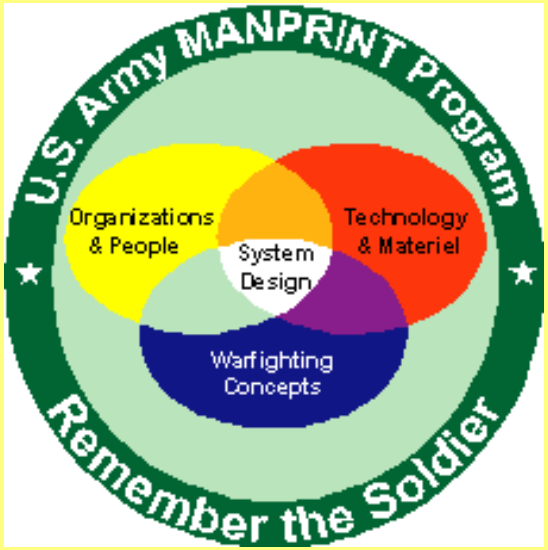
HSI Solutions

- Reduce workload and numbers needed per task/activity
- Define intuitive interfaces
- Provide easy access to required data
- Provide user-centered decision support systems
- Promote and exploit collaborative approaches
- Provide multi-modal displays and operator-focused formats

Human-Centered Design ➡ Effective HSI

- Fewer Personnel
- Better KSA Match
- Less Training
- More Usable Interfaces (Reduced Errors)
  25 - 30% Improvements Expected
- Safer and more survivable systems

HSI: Warfighters as Integral Components in a Total Systems Engineering Approach



MANPOWER

AND

PERSONNEL

INTEGRATION

The entire process of integrating the full range of:

Manpower

Personnel Capability

Training

Human Factors Engineering

System Safety

Health Hazards

Soldier Survivability

To improve total system performance throughout the materiel acquisition process

M A N P R I N T

DOMAINS

MANPOWER - number of military and civilian personnel required and potentially available to operate, maintain, sustain and provide training for systems

PERSONNEL CAPABILITY - cognitive and physical capabilities require to train, operate, maintain and sustain material and information systems

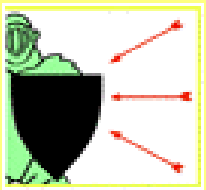
TRAINING - instruction, education, and OJT required to provide personnel and units with their essential job skills, knowledge, values and attitudes.

HUMAN FACTORS ENGINEERING - integration of characteristics into system definition, design, development and evaluation to optimize human-machine performance

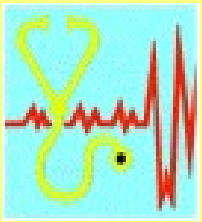
M A N P R I N T

DOMAINS

SYSTEM SAFETY - design and operating characteristics of a system that minimize the human or machine errors or failures that cause accidents

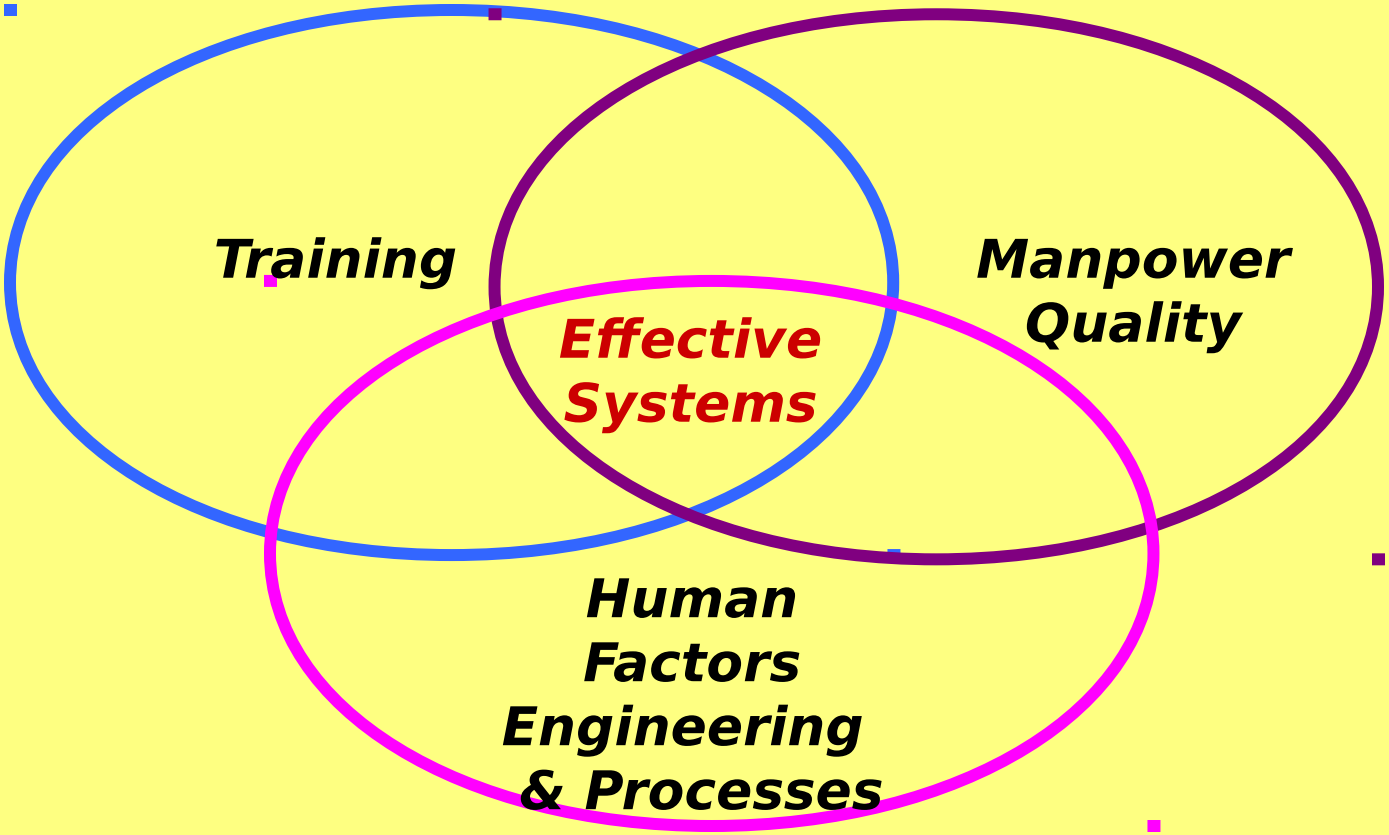


SOLDIER SURVIVABILITY - characteristics of system that can reduce fratricide, detectability, and probability of attack, as well as minimizing system damage, personal injury, and cognitive and physical fatigue



HEALTH HAZARDS - design and operating characteristics of a system that create significant risks of bodily injury or death; sources of health hazards include: loud noise, chemical and biological substances, extreme temperatures, and radiation energy.

MANPRINT OVERVIEW



Optimal systems are built from effective integration

ATEC System Assessment

for the

Stryker Nuclear, Biological, Chemical Reconnaissance Vehicle (NBCRV)

LRIP Decision

NBCRV HFE Improvements

- **Reduce Driver's Heat Stress (CCS)**
  - **Improvement: Average Temp of 88ºF meets MIL STD in MOPP 2**
  - **Additional testing to occur at Yuma at higher temp**

- **CBMS II Buckle Lock**
  - **Improvement: More robust design connection**
  - **Recommend when storing probe, no 90º angle connection for ease of placement**

- **NBC VFM Hose Remounting**
  - **Improvement: Eliminated safety hazards**

- **O2 Depletion/CO Detector**
  - **Improvement: Detector installed into vehicle**
  - **Not integrated (hard-wired) into system**
  - **Only Surveyor/Asst. Surveyor have complete awareness to hear and see alarm**

- **JBPDS Confined Space**
  - **Improvement: Easier access to load and unload consumables**
  - **Asst. Surveyor must develop technique to properly open doors and transfer samples**

NBCRV HFE Improvements

- **Sample Cooler & M48A1 Filter Relocation**
  - **Improvement: Cooler is still too large to open and store the sample**
-
- **Surveyor Head Clearance**
  - **Improvement: Improved head clearance/eliminated safety hazards**
  - **May impact comfort (Violated Mil Std 1472F)**
  - **Seat belt needs to be improved**

- **Surveyor's FFCS & Commander's Weapon relocation/ .50 Cal Barrel Stowage**
  - **Improvement**

- **Protection of the CBMS II Power switch & cable**
  - **Improvement**
  - **Metal housing is oversized, not flush and requires modification**

- **Eliminate METSMAN sharp corners**
  - **Improvement**

- **Sample Vials Storage**
  Improvement

NBCRV HFE Improvements

- **Additional Work Surface for Asst. Surveyor**
  - **Improvement: Need modification to improve functionality**

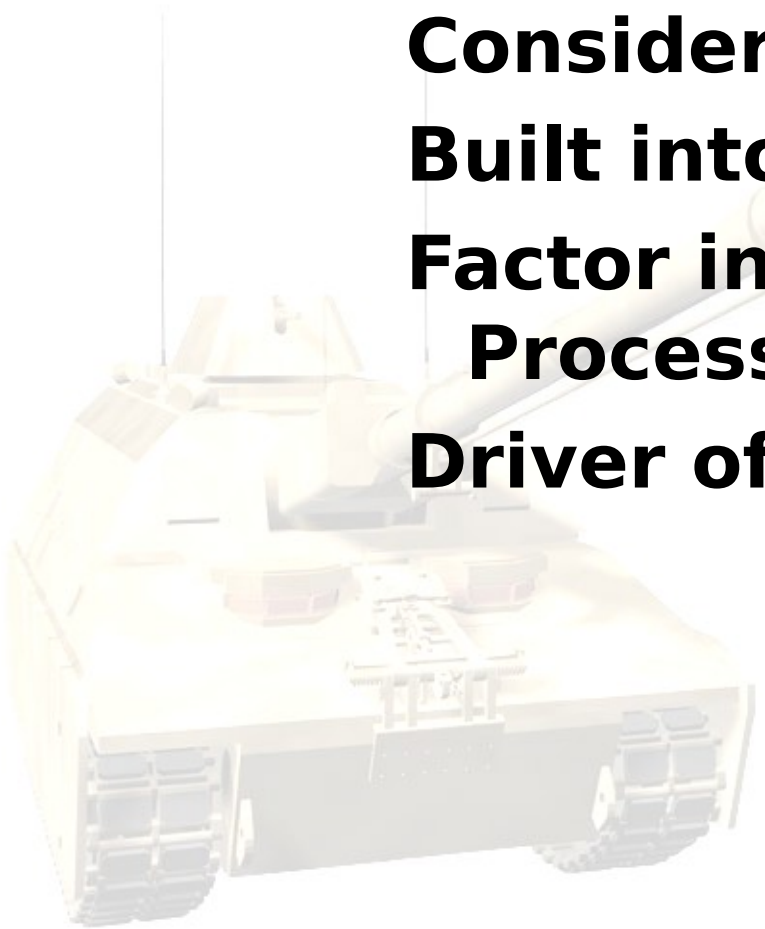
- **Driver AFES Light Indicator**
  - **Improvement: Light integration was accomplished, but push-to-test needs verification in PVT**

- **Rear Deck Changes (DWSS/ Rear Deck)**
  - **Improvement: Rear door redesign is an improvement**
  - **Camera angle and view must be improved**

MANPRINT Program in Crusader

Integral part of Crusader program:

- **Considered from the beginning**
- **Built into the organization**
- **Factor in the Source Selection Process**
- **Driver of Requirements and Desig**



#1 MANPRINT Program in the Army 1996

US Army MANPRINT Conference

MANPRINT Domain--Crusader

Tools & Analysis Design/Requirement		*Leads to*
• IMPRINT • Micro Saint Model • Raytheon Hughes Crew Size Study	Manpower	• Reduced Crew Size from 9 on Paladin to 6 for Crusader
• IMPRINT • Armed Services Vocational Aptitude Battery (ASVAB) Analysis	Personnel	• 13 B can Fight Crusader • ASVAB-FA Score of 95 is Sufficient (Current Requirement)
• Training Task Analysis • Work Load Analysis	Training	• Add Drivers Training to One Station Unit Training (OSUT) • No Increase in the Length of OSUT • Different training tasks – Not more training
• Concept Experimentation Program II • Parameter Assessment List	Soldier Survivability	• Secondary Armament System • Compartmentation; NBC System

MANPRINT Domain--Crusader

Tools & Analysis Design/Requirement

- SAP SWORK
- Use Case Scenarios
- Military Standards & Handbooks

- Paladin Lessons Learned
- System Safety Wk Grp
- Subject Matter Expert

Recommendations

- Fault Tree Analysis
- Hazard Tracking System
- Hazard Analysis
- Health Hazard Analysis
- System Safety Wk Grp
- Surgeon Gen. Guidance

Human Factors Engineering

System Safety

Health Hazards

Leads to

- Graphical User Interfac
- Decision Aids
- Situational Awareness
- Usable Information.. N overload

- Verify Shell/Fuze Data Upload and Prior to Ramming
- Bore Clear Sensor
- Crew Compartment Safety Features
- Designed blow-out pa in
- System Provide Warnin crew of Potential Hazards from Explosion
- Hazard Mitigation

NBC Reconnaissance

A Success Story

Goals of "FOX" Recon System:

- Reduce crew from 4 to 3 soldiers
- Use Army maintainers & supplies
- Add stand-off chemical detection capability (5 km range)

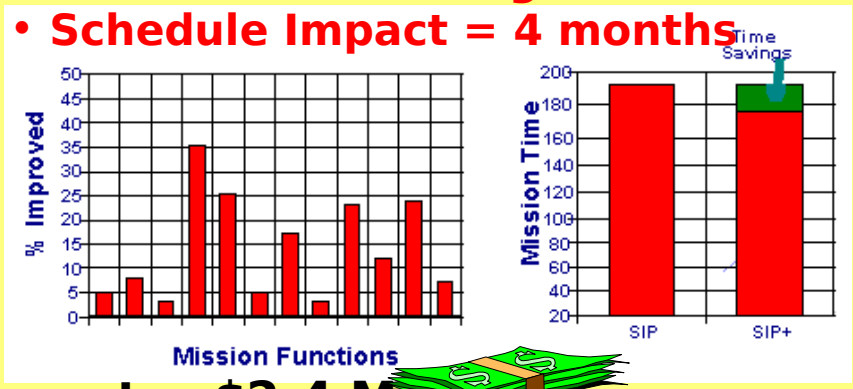
The Problem:

- 3-person crew rated "unsuitable" & "ineffective" by operational evaluators
- Dollars to re-design + dollars to re-test exceeded dollars remaining

The Solution:

- Base system design on:
  - Human figure modeling
  - Task-based mission modeling
- Test to verify model

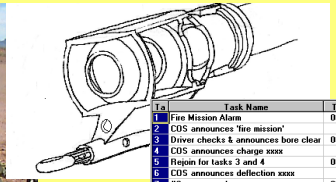
- MANPRINT Modeling Effort Cost = $6
- Schedule Impact = 4 months

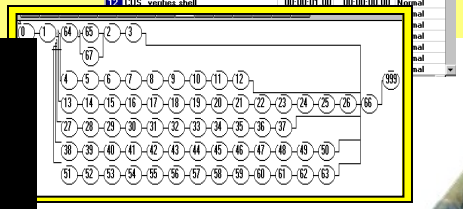


HARDMAN III
MAN-SEVAL
'FOX'
Mission Model
Approved 15 Jan 98
CG OPTEC

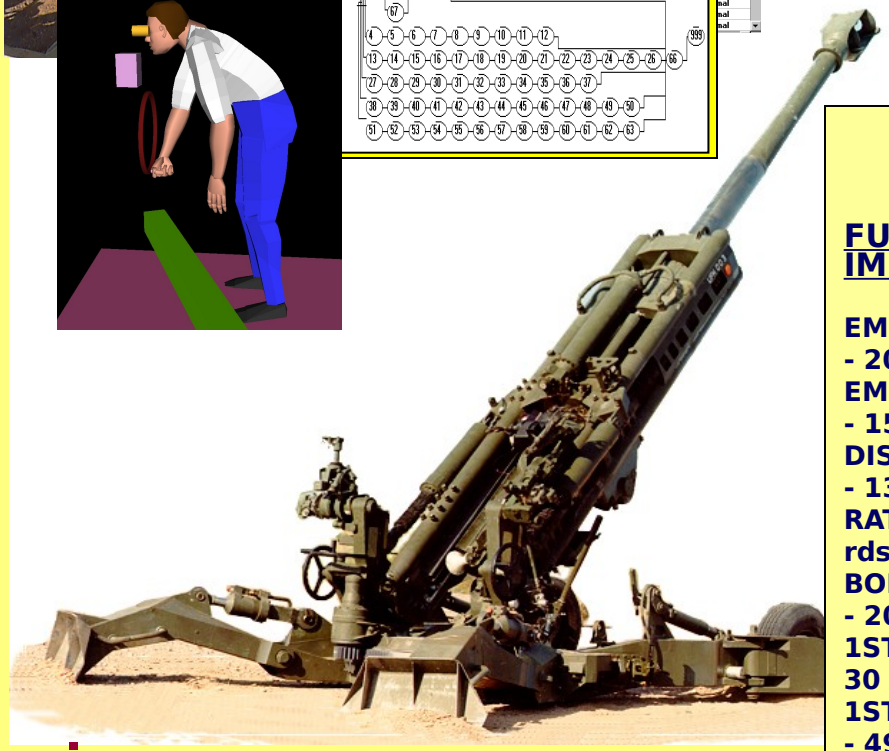
Direct Return on Investment = $2-4 M
Indirect ROI (reduced crew, training, etc.) = $1.5 M/vehic
Total ROI resulting from ARL Support = $137.5 M
OPTEC Accredited Model Support for Block II!

Lightweight 155mm Howitzer





To	Task Name	TimeMean	Time StdDev	Distrib Typ
1	Fire Mission Alarm	00:00:00.00	00:00:00.00	Normal
2	COS announces 'fire mission'	0.7;	00:00:00.00	Normal
3	Driver checks & announces bore clear	00:00:01.70	00:00:00.00	Normal
4	COS announces charge xxxx	1.7;	00:00:00.00	Normal
5	Rejoin for tasks 3 and 4	00:00:00.00	00:00:00.00	Normal
6	COS announces deflection xxxx	1.7;	00:00:00.00	Normal
7	#6 prepares charge	00:00:05.00	00:00:00.00	Normal
8	4 carry projectile place on loading tray	00:00:03.40	00:00:00.00	Normal
9	COS announces quadrant xxx	00:00:01.39	00:00:00.00	Normal
10	#6 carries charge to #2	00:00:03.00	00:00:00.00	Normal
11	#6 hands charge to #2	00:00:01.00	00:00:00.00	Normal
12	COS verifies shell	00:00:01.00	00:00:00.00	Normal



HRED Contributions:

- Human Factors Evaluation
- Task Network Modeling & Validation
- Human Figure Modeling
- Concept Design, Fabrication Evaluation
- Operational Assessment

JPM XM777 estimates $6.2

REQUIREMENTS RISK REDUCTION

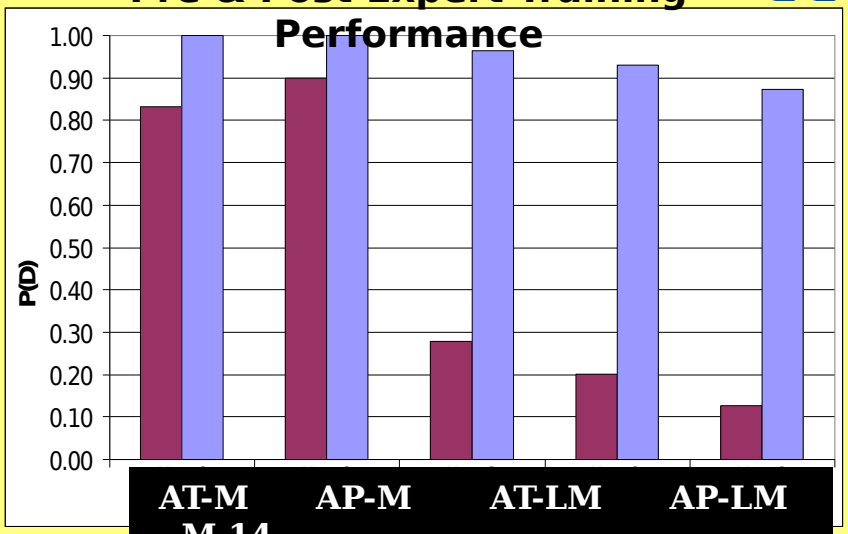
FUNCTION IMPRINT	SHOOT-OFF	JORD	
EMPLACEMENT (firm soil) - 202 sec	284 sec	180 sec	184
EMPLACEMENT (loose soil) - 152 sec		180 sec	138
DISPLACEMENT - 134 sec	176 sec	120 sec	120
RATE-OF-FIRE (for 2 min) rds/min[1]	4.2rd/min	5.0 rds/min	4.1 - 4.5
BOLD SHIFT - 204 sec [2]	423+ sec	180 sec	172
1ST RD RESPONSE LOW ANGLE 30 sec [3]	41 sec	30 sec	27-
1ST RD RESPONSE HIGH ANGLE - 49 sec [3]	56 sec	45 sec	45

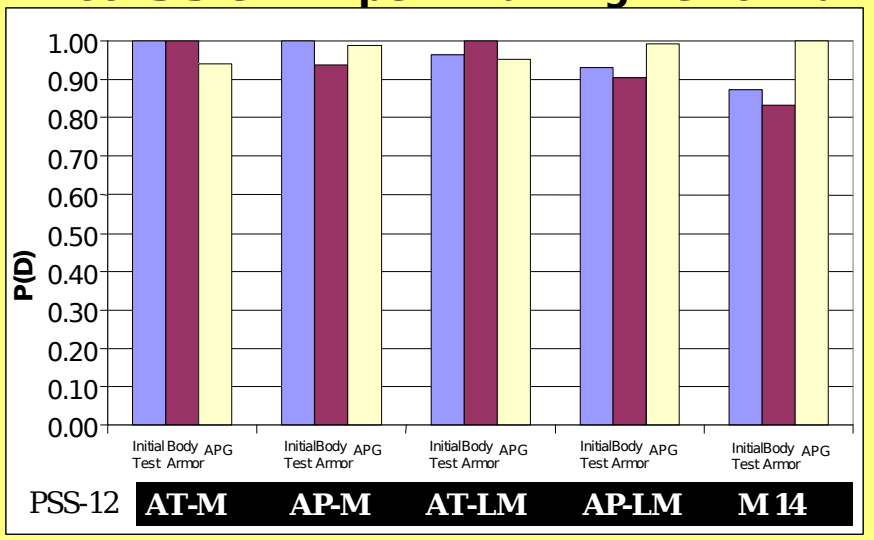
(1) assumes bang-to-bang and first round free
(2) f(soil); may need 7 crewmen in sand & mud
(3) worst case QE (800 LO, 1200 HI); lower QE will have lower times

Handheld Mine Detection

Detection is More than Just the Detector

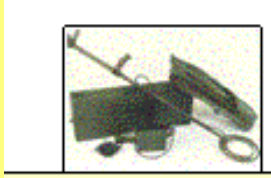
- **Human Factors Issues**
- **Auditory Abilities**
- **Auditory Training**



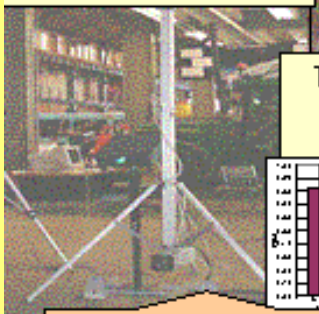


Low Metal Mine Detection Improved From ~20%

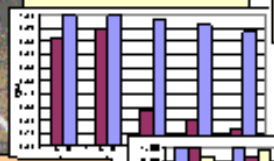
MANPRINT Improvements For Handheld Mine Detectors



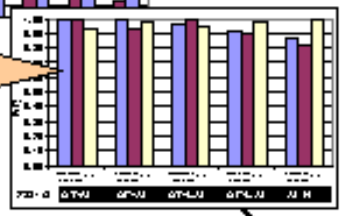
CMU and HRED Collaborate on Human Factors and Training Issues



Techniques Applied to AN/PSS-12



ARO Single Investigator Research Effort



MANPRINT Insertion into HSTAMIDS Acquisition

Human factors engineering design continually applied to AN/PSS-14

Validation of Training at Ft Polk

Engineer School Adopts Techniques!

Transitions:

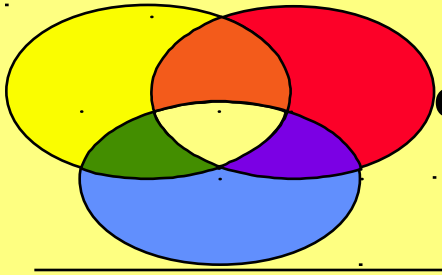
- *Engineer School*
- *PM Close Combat Systems*
- *Payoff:*
- *Low Metal Mine Detection Improved!*
  - *From ~20% to ~90% for AN/PSS-12*
  - *To 98+% for the AN/PSS-14*

1998 1999 2000 2001 2002 2003

Carnegie Mellon

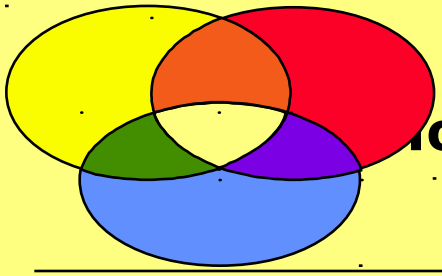
OPM-CCS

200+ Systems Now Supporting Contingency Forces



ow to have a Successful MANPRINT Program -- Combat Developers

- Include MANPRINT representative(s) on Integrated Concept Team (ICT)
  - Establish MANPRINT plan (SMMP)
  - Identify and document MANPRINT issues/concerns
- Include soldier & unit (MANPRINT) considerations in requirements documentation
  - MANPRINT/HSI specifically addressed in para 13 and 14 of CDD and CPD
- Transfer documentation of MANPRINT issues to PM
  - SMMP and CDEs
  - Ensure seamless MANPRINT consideration in system design efforts



How to have a Successful MANPRINT Program
-- Materiel Developers

- Include MANPRINT considerations in program planning & execution
  - PM shall have a comprehensive plan for MANPRINT early in process
  - Summarize MANPRINT planning in acquisition strategy
  - Incorporate MANPRINT requirements in solicitation(s) and source selection(s)
    - In Comanche source selection, 17% of score centered on MANPRINT considerations
  - Provide resources for MANPRINT program implementation
- Make MANPRINT part of your Integrated Product Team (IPT)
  - Where appropriate, charter a MANPRINT Working IPT
  - Establish MANPRINT plan of action and milestones
  - Track MANPRINT issues/concerns with domain SME's
- Require the Contractor to execute a planned MANPRINT Program
  - Track and document MANPRINT issues via CDEs, SMMP, or similar mechanism
- Include MANPRINT issues in test & evaluation planning
  - Crosswalk MANPRINT performance parameters, objectives and thresholds from the CDD and CPD to the RFP and to the TEMP

Keys to Success of MANPRINT in Crusader Program

A success story

- **Early Implementation of MANPRINT In PDRR**
  - **High Visibility**
  - **All MANPRINT Domains Addressed**
- **OPM Crusader MANPRINT Management Initiatives**
  - **Ample Resources**
  - **Full Management Support (PM, TSM, Contractors)**
  - **Soldier Involvement**
- **MANPRINT WIPT & IPTs**
  - **Utilization of State-Of-Art Tools**
  - **Effective Use of Modeling & Simulation**